

Claims:

1. A method for extracting nucleic acid from a liquid mixture containing nucleic acid, the method employing (a) a container comprising a solid phase capable of binding nucleic acid and (b) reversible suction means for drawing the liquid mixture over the solid phase, the method comprising reversibly drawing the liquid mixture over the solid phase so that nucleic acid in the sample binds to the solid phase.
2. The method of claim 1, wherein the nucleic acid is DNA or RNA, or a mixture of both.
3. The method of claim 1 or claim 2, wherein the container has a volume less than or equal to 100 ml.
4. The method of any one of claims 1 to 3, further comprising the step of expelling the liquid mixture from the container after extraction of nucleic acids.
5. The method of any one of the preceding claims, further comprising washing the solid phase to remove bound materials other than nucleic acid.
6. The method of any one of the preceding claims, further comprising removing the nucleic acids from the solid phase by eluting with a solvent.
7. The method of any one of the preceding claims, further comprising reversibly drawing a second liquid mixture over the solid phase so that nucleic acid in the second liquid mixture binds to the solid phase.
8. The method of any one of the preceding claims,

further comprising homogenising the liquid mixture prior to drawing the liquid mixture over the solid phase.

9. The method of any one of the preceding claims,
5 wherein the reversible suction means is a syringe.

10. The method of any one of the preceding claims,
wherein the container is a disposable cartridge.

10 11. The method of any one of claims 1 to 10, wherein a syringe is the container and reversible suction means and the solid phase is contained in the barrel of the syringe.

15 12. The method of any one of claims 1 to 9, wherein the container is a pipette and the solid phase is located in the tip of the pipette.

20 13. The method of any one of claims 1 to 9, wherein the container is an extraction cartridge.

14. The method of any one of the preceding claims, wherein the solid phase can move inside the container.

25 15. The method of any one of the preceding claims, wherein the container and reversible suction means are releasably connected.

30 16. The method of any one of the preceding claims, wherein the solid phase comprises porous or non-porous beads.

17. The method of claim 16, wherein the solid phase comprises beads of polymeric material having surface

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groups which are pyrazole, pyrrole, pyrrolidine, indole, pyrimidine, nucleic acid bases, imidazole, imines, amines, lysines or a group having a pKa in the range of 3 to 12.

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Subced 18. The method of claim 17 or claim 18, wherein the beads are derivatised so that they are capable of selectively binding nucleic acid.

10 19. The method of any one of claims 16 to 18, wherein the beads are retained in the container by a frit, porous membrane or mesh.

15 20. The method of claim 19, wherein the frit, porous membrane or mesh has a pore diameter of at least 0.1 mm.

20 21. The method of any one of the preceding claims, wherein the container has an inner surface having ridges or spirals to cause mixing between liquid mixture and solid phase.

25 22. The method of any one of claims 1 to 14, wherein the solid phase comprises one or more spaced apart discs or membranes, each having holes with a diameter of at least 0.1 mm, or cut away sections.

23. The method of any one of the preceding claims, wherein a by-pass channel runs through the solid phase.

30 24. The method of any one of the preceding claims, wherein the solid phase has a pore size of greater than 0.1 mm.

25. A method for extracting nucleic acid from a liquid

mixture containing nucleic acid, the method employing (a) a container comprising an electrode capable of binding nucleic acid and (b) reversible suction means for drawing the liquid mixture over the solid phase, the method comprising reversibly drawing the liquid mixture over the electrode so that nucleic acid in the sample binds to the electrode surface.

26. An extraction device for extracting nucleic acid from a liquid mixture containing nucleic acid, the device comprising (a) a container containing a solid phase capable of binding nucleic acid and (b) reversible suction means for drawing the liquid mixture over the solid phase.

27. The extraction device of claim 26, wherein the container has a volume less than or equal to 100 ml and the solid phase is located within the barrel of the syringe.

28. The extraction device of claim 27, wherein the reversible suction means is a syringe and the solid phase is located in a cartridge releasably connected to the nozzle of the syringe.

29. The extraction device of claim 27, wherein the container is a pipette and the solid phase is located within the tip of the pipette.

30. The extraction device of claim 29, wherein an aerosol plug is located in the body of the pipette.

31. An extraction device for simultaneously extracting nucleic acids from two or more liquid mixtures containing

nucleic acids, comprising (a) two or more containers each containing a solid phase capable of binding nucleic acid and (b) reversible suction means which may be applied simultaneously to each container to reversibly draw a
5 liquid mixture over the solid phase.

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